



“All the 9s”

Achieving the Full Potential of Out-of-Band Redundancy Maximisation

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**Chief
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All the 9s?

- Five 9s or 99.999% availability
- 8760 hours in a Year
- 8759.9124 must be available
- 0.0876 hours downtime
- Or 5.256 minutes downtime per year

- Every site will have 2 Sun Outages per year – 10 - 30 minutes
- Most sites will require maintenance – 60 minutes
- Some sites will suffer atmospheric attenuation, line of site, subsidence, equipment failure 0 – 240 hours
- Mobile sites will move around varying quality coverage

- To achieve five 9s Out-of-Band is a must

Link or Service Uptime

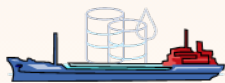
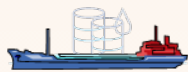
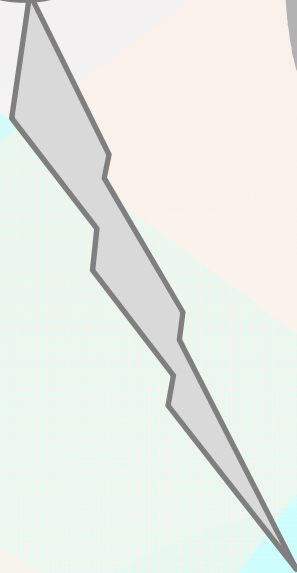
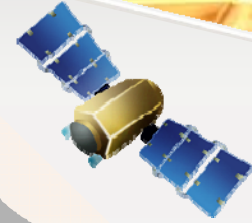
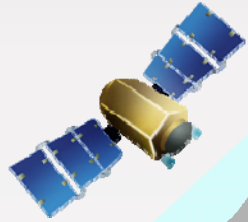
- Link Uptime:
 - Ping response, Rx Lock, etc. Varying quality
 - 2Mb always available (but not necessarily useable)
 - There are not many out-of-band options for 2Mb
 - Expensive, ineffective
- Service availability:
 - Voice, Data, Video, etc
 - Critical (128Kb) VS none critical apps (1.87Mb)
 - Quality guarantee, intelligence required
- Cost:
 - 99.999 % of 128Kb is more achievable and cost effective
 - 95% of the rest is more achievable
 - Cost/Availability trade off is acceptable



Out of Band options



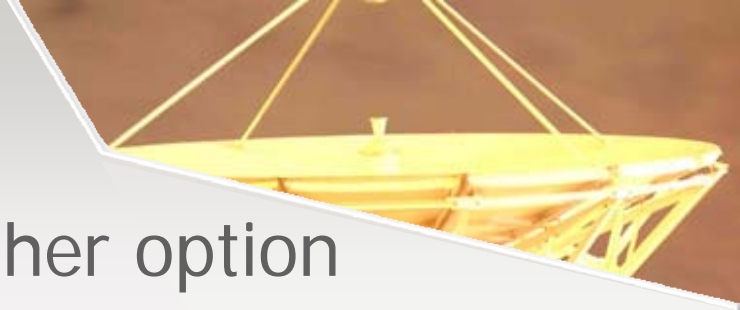
- Out of band options
 - Various bands C, Ka, Ku, X
 - VSAT, Inmarsat, WiFi, WiMax, 3G, GSM, fiber
 - Various footprints and providers
 - Various costs
- Intelligent routing
 - Which service is available, most sensible, cost effective, quality, legal, strategic, congested.
 - Requires all data in 1 central place
 - Requires dynamic automated decisions at the NOC
 - Requires dynamic automation at the remote



Intelligence

- Measureable both for customer and for you.
- Customer/Charging
 - Service uptime and availability
 - Prove it
 - Pay the bill
- Supplier/Paying
 - How long did you use provider X
 - How much bandwidth did you use with provider Y
 - Was customer Zs vessel within service guarantee area?
 - Was the service working? Can you prove it?
- Can you get paid and make sure you don't overpay.

Recommendations



- The Out of band link is just another option
- Create a NOC infrastructure that can:
 - Decide is it sensible to use it
 - Decide if it is cost effective
 - Automate the switch over
 - Report for provider and customer
 - Improves margin
 - Improves service



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